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SUBSTITUTE SPECIFICATION

TRANSMISSION AND SYNCHRONIZER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority under 35 U.S.C. §119 of Japanese Patent Application No. 2004-314705, filed on October 28, 2004, the entire content of which is expressly incorporated by reference herein.

TECHNICAL FIELD OF THE INVENTION

[0002] The present invention relates to a transmission with a synchronizer that is used in automotive power transmissions, etc., and that is equipped with at least a coupling sleeve, a synchro hub, a balk ring, and a clutch gear.

BACKGROUND

[0003] In the conventional manual transmission synchronizer, the coupling sleeve is moved by the driver's shift lever operation to change speeds, and the coupling sleeve chamfer and balk ring chamfer come into contact. Then, the movement of the coupling sleeve is stopped, the cone surface of the balk ring pushes the cone surface of the clutch gear, thus generating a synchronizing torque (synchronizing force), resulting in rotation synchronization of the balk ring and the synchro hub (for example, refer to Unexamined Japanese Patent Application Publication No. H6-33952 and Unexamined Japanese Utility Model Application Publication No. H6-8824).

SUMMARY

[0004] In the conventional manual transmission synchronizer, the entire synchronizing torque (synchronizing force), which is generated when the balk ring cone surface pushes the clutch gear cone surface after the contact of the coupling sleeve chamfer and the balk ring chamfer, is directly transmitted from the coupling sleeve to the shift lever. This does not help the shift operation force to decrease.